8th NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-18)

MESSAGE FROM THE CHAIRS

Welcome to EduPar 2018 proceedings, the 8th NSF/TCPP Workshop on Parallel and Distributed Computing Education. Inaugurated in 2011, EduPar has been a regular workshop of the IPDPS conference since its second year in 2012, attracting rightly deserved attention due to the importance of its focus. The workshop provides a global forum for exploring new ideas and experiences related to a seamless inclusion of Parallel and Distributed Computing (PDC) topics in Computer Science (CS) and Computer Engineering (CE) and related curricula. Growing out of its primary focus on curricula at undergraduate levels, the workshop now offers a platform to discuss educational efforts also at K-12 and graduate levels, and in informal settings. This effort is in coordination with the TCPP curriculum initiative (http://www.cs.gsu.edu/~tcpp/curriculum) for CS/CE undergraduates supported by NSF and its NSF-supported Center for Parallel and Distributed Computing Curriculum Development and Educational Resources (CDER).

Parallel and Distributed Computing (PDC) now permeates most computing activities. The pervasiveness of computing devices containing multicore CPUs and GPUs, including home and office PCs, laptops, and mobile devices, is making even common users dependent on parallel processing. This brings out the question of how to adapt education to prepare learners for the prevailing technology. Certainly, it is no longer sufficient for even basic programmers to acquire only the traditional sequential programming skills. The preceding trends point to the need for imparting a broad-based skill set in PDC technology at various levels in the educational fabric woven by Computer Science (CS) and Computer Engineering (CE) programs as well as related computational disciplines. However, the rapid changes in computing hardware platforms and devices, languages, supporting programming environments, and research advances, more than ever challenge educators in knowing what to include in the curriculum and what to teach in any given semester or course.

EduPar invited unpublished manuscripts from individuals or teams from academia, industry, and other educational and research institutes from all over the world on topics pertaining to the teaching of PDC topics in the Computer Science and Computer Engineering curriculum as well as in domain-specific computational and data science and engineering curricula. We received 16 regular paper submissions of which 8 were accepted as regular papers after careful review of each submission by three to five program committee members. In addition to the talks on these papers, the EduPar Program also featured 5 invited poster presentations on the work of Early Adopters of the NSF/TCPP PDC Curriculum Guidelines.

Additionally, the 8th EduPar workshop introduced a new session dedicated to practical, tried and true course assignments. Course assignments are integral to student learning in computing and also play an important role in student perceptions of the field. Instructors love to give exciting assignments that highlight important applications while emphasizing important principles and techniques. Unfortunately, creating great assignments is time-consuming and even our best efforts do not always succeed. With this in mind, EduPar introduced a session showcasing "Peachy Parallel Assignments" - high-quality assignments, previously-tested in class, that are readily adoptable by other educators teaching topics in parallel and distributed computing. This effort is inspired by "Nifty Assignments" (http://nifty.stanford.edu). We thank David Bunde for initiating and coordinating this activity.

Recognizing that it is our responsibility to work towards ameliorating societal issues, the 8th EduPar workshop organized a discussion panel "Attracting the Underrepresented: Recruitment, Retention, Rewards" featuring Barbara Simons and Fran Berman.

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society

The keynote was delivered by Alexandru Iosup who spoke about the Future of Higher Education: Darwinian and non-Darwinian Advances in Curriculum, Didactics, Technology, and Management.

We strive to make EduPar workshop a welcoming, engaging venue where educators from all over the world can come together, share their experiences and enrich their views on all issues surrounding PDC education. To facilitate dissemination of results and findings and to promote collaboration, we have designed the workshop program so that it maximizes interactions between participants. As in the previous workshops, we included an author Q&A panel at the end of each session, a separate poster viewing session introduced with an overview of posters and peachy assignments submissions. Last but not least, we concluded the program with the diversity panel. We also had a brief session on updating the community on the ongoing revision of the NSF/TCPP Curriculum, especially from the aspects of Big Data, Energy, Distributed Computing, Cross-cutting topics and Exemplars.

We are grateful to the members of the Technical Program Committee for their thorough, constructive and insightful reviews of the EduPar-18 submissions and follow-up discussions during program committee meeting. We would also like to thank the IPDPS Workshops Organization and IPDPS for the support provided, including financial support for posters and keynote, in making EduPar-18 a great success.

EduPar is organized in coordination with NSF/TCPP curriculum initiative for CS/CE undergraduates (http://www.cs.gsu.edu/~tcpp/curriculum/index.php) and its NSF-supported Center for Parallel and Distributed Computing Curriculum Development and Educational Resources (CDER). Travel support is provided to those NSF/TCPP Early Adopters who presented a poster or a paper by the National Science Foundation (NSF) and Intel. We thank NSF for their continued support for the NSF/TCPP PDC curriculum initiative, the early adopter competitions (stipend, travel), and the EduPar workshop series. We also thank Intel for their support for the initiative, particularly for the international early adopter institutions. Our heartfelt thanks go to co-organizers Sheikh Ghafoor, Anshul Gupta, Arny Rosenberg, Alan Sussman, Ramachandran Vaidyanathan, and Chip Weems for their tireless efforts.

Visit the EduPar-18 website at http://cs.gsu.edu/~tcpp/curriculum/?q=edupar for the complete online proceedings, including presentation slides of the contributed papers and all the posters.

Martina Barnas, Technical Program Chair
Sushil K Prasad, Workshop Chair
Satish Puri, Proceedings Chair
April 2018

Technical Program Committee:

Joel Adams, Ioana Banicescu, David Brown, David Bunde, Jeffrey Carver, Chris Cox,
Debzani Deb, Trilce Estrada, Victor Gergel, Sheikh Ghafoor, Nasser Giacaman,
Domingo Gimenez, Anshul Gupta, Michael Heroux, Jeremy Iverson, David Kaeli,
Krishna Kant, Karen L. Karavanic, Kishore Kothapalli, Yanik Ngoko, Virginia Niculescu,
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Arnold Rosenberg, Krishnendu Roy, Scott Sellars, Jawwad Shamsi, Rudrapatna Shyamasundar,
Alan Sussman, Jerry Trahan, Ramachandran Vaidyanathan, Frédéric Vivien, Charles Weems